

Curriculum Map: Algebra 1 - 2019

Course: ALGEBRA 1 Sub-topic: Algebra

Grade(s): 8 to 12

Course *Students at this level will exhibit the following:*

Description:

Make sense of problems and persevere in solving them

- Examine problems by explaining to themselves the meaning of a problem and looking for entry points to its solution
- Analyze givens, constraints, relationship, and goals
- Make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt
- Consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution
- Monitor and evaluate their progress and change course if necessary
- Depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need
- Explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends
- Check their answers to problems using different methods and continually ask themselves, "Does this make sense?"
- Understand the approaches of others to solving complex problems and identify correspondences between different approaches

Reason abstractly and quantitatively

- Seek to make sense of quantities and their relationships in problem situations
- Abstract a given situation and represent it symbolically, manipulate the representing symbols, and pause as needed during the manipulation process in order to probe into the referents for the symbols involved
- Use quantitative reasoning to create coherent representations of the problem at hand; consider the units involved; attend to the meaning of quantities, not just how to compute them; and know and flexibly use different properties of operations and objects

Construct viable arguments and critique the reasoning of others

- Understand and use stated assumptions, definitions, and previously established results in constructing arguments
- Make conjectures and build a logical progression of statements to explore the truth of their conjectures
- Analyze situations by breaking them into cases, and can recognize and use counterexamples
- Justify their conclusions, communicate them to others, and respond to the arguments of others
- Reason inductively about data, making plausible arguments that take into account the context from which the data arose
- Compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from what is flawed, and - if there is a flaw in an argument - explain what it is
- Determine domains, to which an argument applies, listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments

Model with mathematics

- Apply the mathematics they know to solve problems arising in everyday life, society, and the workplace
- Use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another
- Make assumptions and approximations to simplify a complicated situation, realizing that these may need revision later
- Identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas
- Analyze relationships mathematically to draw conclusions

- Routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose

Use appropriate tools strategically

- Consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software
- Be familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations
- Analyze graphs of functions and solutions generated using a graphing calculator
- Detect possible errors by strategically using estimation and other mathematical knowledge
- Make mathematical models, knowing that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data
- Identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems
- Use technological tools to explore and deepen their understanding of concepts

Attend to precision

- Communicate precisely to others by using clear definitions in discussion with others and in their own reasoning
- State the meaning of the symbols they choose, specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem
- Calculate accurately and efficiently, and express numerical answers with a degree of precision appropriate for the problem context
- Examine claims and make explicit use of definitions

Look for and make use of structure

- Look closely to discern a pattern or structure. In the expression $x^2 + 9x = 12$, older students can see the 14 as 2×7 and then 9 as $2 + 7$
- Recognize the significance of an existing line in a geometric figure and use the strategy of drawing an auxiliary line for solving problems
- Step back for an overview and shift perspective
- See complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y
- Use these patterns to create equivalent expressions, factor and solve equations, compose functions, and transform figures

Look for and express regularity in repeated reasoning

- Notice if calculations are repeated. Look both for general methods and for shortcuts. Noticing the regularity in the way terms cancel when expanding $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series
- Derive formulas or make generalizations
- Maintain oversight of the process, while attending to the details
- Continually evaluate the reasonableness of their immediate results

Unit: Equations and Inequalities

Month: September, October, March, April

Skills: 1. Use inverse operations to solve equations and inequalities containing variables.

2. Write equations and inequalities to represent situations.
3. Simplify equations before solving.

Essential Questions:

1. How do I choose procedures to solve equations and inequalities efficiently?

Content:

1. Solve linear equations and inequalities.
2. Solve absolute value equations and inequalities.
3. Solve systems of linear equations and inequalities.
4. Write, solve and/or graph compound inequalities.

Vocabulary:

Absolute Value
 Compound Inequality
 Consistent System
 Dependent System
 Equation
 Formula
 Identity
 Inconsistent System
 Independent System
 Indirect Measurement
 Inequality
 Intersection
 Linear Inequality
 Literal Equation
 Proportion
 Ratio
 Solution of a Linear Inequality
 Solution of an Inequality
 System of Linear Equations
 Unit Rate

Resources:

Holt McDougal Algebra 1 Common Core Edition Textbook
 Graphing Calculator

STANDARDS: STANDARDS

STATE: Pennsylvania SAS Keystone Anchors (2010-2014)

[A1.1.2.1 \(Advanced\)](#) Write, solve, and/or graph linear equations using various methods.

[A1.1.2.1.1 \(Advanced\)](#) Write, solve, and/or apply a linear equation (including problem situations).

[A1.1.2.1.2 \(Advanced\)](#) Use and/or identify an algebraic property to justify any step in an equation-solving process. Note: Linear equations only.

[A1.1.2.1.3 \(Advanced\)](#) Interpret solutions to problems in the context of the problem situation. Note: Linear equations only.

[A1.1.2.2 \(Advanced\)](#) Write, solve, and/or graph systems of linear equations using various methods.

[A1.1.2.2.1 \(Advanced\)](#) Write and/or solve a system of linear equations (including problem situations) using graphing, substitution, and/or elimination. Note: Limit systems to two linear equations.

[A1.1.2.2.2 \(Advanced\)](#) Interpret solutions to problems in the context of the problem situation. Note: Limit systems to two linear

	equations.
A1.1.3.1 (Advanced)	Write, solve, and/or graph linear inequalities using various methods.
A1.1.3.1.1 (Advanced)	Write or solve compound inequalities and/or graph their solution sets on a number line (may include absolute value inequalities).
A1.1.3.1.2 (Advanced)	Identify or graph the solution set to a linear inequality on a number line.
A1.1.3.1.3 (Advanced)	Interpret solutions to problems in the context of the problem situation. Note: Linear inequalities only.
A1.1.3.2 (Advanced)	Write, solve, and/or graph systems of linear inequalities using various methods.
A1.1.3.2.1 (Advanced)	Write and/or solve a system of linear inequalities using graphing. Note: Limit systems to two linear inequalities.
A1.1.3.2.2 (Advanced)	Interpret solutions to problems in the context of the problem situation. Note: Limit systems to two linear inequalities.
A1.2.1.2 (Advanced)	Interpret and/or use linear functions and their equations, graphs, or tables.
A1.2.1.2.1 (Advanced)	Create, interpret, and/or use the equation, graph, or table of a linear function.
A1.2.1.2.2 (Advanced)	Translate from one representation of a linear function to another (i.e., graph, table, and equation).
A1.2.1.2.3 (Advanced)	Write or identify a linear equation when given <ul style="list-style-type: none"> • the graph of the line, • two points on the line, or • the slope and a point on the line. Note: Linear equation may be in point-slope, standard, and/or slope-intercept form.

Topic: Lesson 1

Minutes for Topic: 40

Core Lesson Description: Variables and Expressions

Core Lesson Student Learning Objectives: Students will be able to:

1. **(E)** Translate between words and algebra.
2. **(E)** Evaluate algebraic expressions.

Topic: Lesson 2 & 3

Minutes for Topic: 80

Core Lesson Description: Solving Equations by Adding/Subtracting and Multiplying/Dividing

Core Lesson Student Learning Objectives: Students will be able to:

1. **(E)** Solve one-step equations

Topic: Lesson 4

Minutes for Topic: 40

Core Lesson Description: Solving Multi-Step Equations

Core Lesson Student Learning Objectives: Students will be able to:
1. **(E)** Solve equations that require more than one-step

Topic: Lesson 5 & 6

Minutes for Topic: 80

Core Lesson Description: Solving Equations with Variables on Both Sides

Core Lesson Student Learning Objectives: Students will be able to:
1. **(E)** Solve equations that have variables on both sides.

Topic: Lesson 7 & 8

Minutes for Topic: 80

Core Lesson Description: **(I)** Review and Assessment

Topic: Lesson 9

Minutes for Topic: 40

Core Lesson Description: Write and Use Rates, Ratios, and Unit Rates

Core Lesson Student Learning Objectives: Students will be able to:
1. **(E)** Write and use rates, ratios, and unit rates.
2. **(E)** Write and solve proportions.

Topic: Lesson 10

Minutes for Topic: 40

Core Lesson Description: Solve Proportions and Use Proportions with Similar Geometric Figures

Core Lesson Student Learning Objectives: Students will be able to:
1. **(E)** Solve proportions.
2. **(E)** Use proportions with similar geometric figures.

Topic: Lesson 11 - 14

Minutes for Topic: 160

Core Lesson Description: **(I)** Review and Assessment

Topic: Lesson 15

Minutes for Topic: 40

Core Lesson Description: Graphing, Writing, and Solving Simple Inequalities in One Variable by Adding/Subtracting

Core Lesson Students will be able to:

Student Learning**Objectives:**

1. **(E)** Write and graph simple inequalities.
2. **(E)** Solve one-step inequalities using adding and subtracting.

Topic: Lesson 16

Minutes for Topic: 40

**Core Lesson
Description:**

Solving One Variable Inequalities by Multiplying and Dividing

**Core Lesson
Student Learning
Objectives:**

Students will be able to:

1. **(E)** Solve one variable inequalities by multiplying or dividing.

Topic: Lesson 17 & 18

Minutes for Topic: 80

**Core Lesson
Description:**

Solving Multi-Step Inequalities and Inequalities with Variables on Both Sides

**Core Lesson
Student Learning
Objectives:**

Students will be able to:

1. **(E)** Solve multi-step inequalities.
2. **(E)** Solve inequalities with variables on both sides.

Topic: Lesson 19 & 20

Minutes for Topic: 80

**Core Lesson
Description:****(I)** Review and Assessment**Topic: Lesson 21 & 22**

Minutes for Topic: 80

**Core Lesson
Description:**

Solving Compound Inequalities

**Core Lesson
Student Learning
Objectives:**

Students will be able to:

1. **(E)** Solve "and" inequalities.
2. **(E)** Solve "or" inequalities.

Topic: Lesson 23 & 24

Minutes for Topic: 80

**Core Lesson
Description:**

Solving Absolute Value Equations

**Core Lesson
Student Learning
Objectives:**

Students will be able to:

1. **(E)** Solve absolute value equations.

Topic: Lesson 25 & 26

Minutes for Topic: 40

Core Lesson Description: Use Absolute Value Equations/Inequalities to Solve Problems

Core Lesson Student Learning Objectives: Students will be able to:

1. **(E)** Solve absolute value equations/inequalities to represent a graph or real-world situation.

Topic: Lesson 27-29

Minutes for Topic: 120

Core Lesson Description: **(I)** Review and Assessment

Topic: Lesson 104 & 105

Minutes for Topic: 80

Core Lesson Description: Solving Linear Systems by Graphing

Core Lesson Student Learning Objectives: Students will be able to:

1. **(E)** Identify solutions of systems of linear equations in two variables.
2. **(E)** Solve systems of linear equations by graphing.

Topic: Lesson 106 & 107

Minutes for Topic: 80

Core Lesson Description: Solving Systems by Substitution

Core Lesson Student Learning Objectives: Students will be able to:

1. **(E)** Solve systems of linear equations by substitution.

Topic: Lesson 108 & 109

Minutes for Topic: 80

Core Lesson Description: Solving Systems by Elimination

Core Lesson Student Learning Objectives: Students will be able to:

1. **(E)** Solve systems of linear equations in two variables by elimination.
2. **(C)** Compare and use a method for solving systems of linear equations.

Topic: Lesson 110 & 111

Minutes for Topic: 80

Core Lesson Description: Solving Special Systems

Core Lesson Student Learning Objectives: Students will be able to:

1. **(E)** Solve special systems of linear equations in two variables.
2. **(E)** Classify systems of linear equations and determine the number of solutions.

Topic: Lesson 112 & 113

Minutes for Topic: 80

Core Lesson Description: (I) Review and Assessment

Topic: Lesson 114 & 115

Minutes for Topic: 80

Core Lesson Description: Solving Linear Inequalities

Core Lesson Student Learning Objectives: Students will be able to:
1. (E) Graph and solve linear inequalities in two variables.

Topic: Lesson 116 & 117

Minutes for Topic: 80

Core Lesson Description: Solving & Graphing Systems of Linear Inequalities

Core Lesson Student Learning Objectives: Students will be able to:
1. (E) Graph and solve systems of linear inequalities in two variables.

Topic: Lesson 118-121

Minutes for Topic: 180

Core Lesson Description: (I) Review and Assessment

Unit: Rational and Irrational Numbers & Real Number Systems

Month: November

Skills: 1. Represent and/or use numbers in equivalent forms (integers, fractions, decimals, percent's, square roots, exponents).

Essential Questions: 1. How do I evaluate and simplify expressions containing exponents?

Content: 1. Evaluate and simplify integer and rational exponents.

Vocabulary: Base
Exponent
Index
Integer
Root

Resources: Holt McDougal Algebra 1 Common Core Edition Textbook
Graphing Calculator

STANDARDS: STANDARDS

STATE: Pennsylvania SAS Keystone Anchors (2010-2014)

- [A1.1.1.1 \(Advanced\)](#) Represent and/or use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, square roots, and exponents).
- [A1.1.1.1.1 \(Advanced\)](#) Compare and/or order any real numbers. Note: Rational and irrational may be mixed.
- [A1.1.1.3 \(Advanced\)](#) Use exponents, roots, and/or absolute values to solve problems.
- [A1.1.1.3.1 \(Advanced\)](#) Simplify/evaluate expressions involving properties/laws of exponents, roots, and/or absolute values to solve problems. Note: Exponents should be integers from -10 to 10.
- [A1.1.1.5.3 \(Advanced\)](#) Simplify/reduce a rational algebraic expression.

Topic: Lesson 30 & 31

Minutes for Topic: 80

Core Lesson Description: Integer Exponents**Core Lesson Student Learning Objectives:** Students will be able to:
1. **(E)** Evaluate expressions containing zero and integer exponents.**Topic: Lesson 32 & 33**

Minutes for Topic: 80

Core Lesson Description: Rational Exponents**Core Lesson Student Learning Objectives:** Students will be able to:
1. **(E)** Evaluate and simplify expressions containing rational exponents.**Topic: Lesson 34 & 35**

Minutes for Topic: 80

Core Lesson Description: **(I)** Review and Assessment**Unit: Polynomial and Rational Expressions****Month:** November, December, January**Skills:**
1. Add, subtract, and multiply polynomials by using properties of exponents and combining like terms.
2. Factor polynomials and special products.
3. Choose an appropriate factoring method.**Essential** 1. How do I perform operations on polynomials?

Questions: 2. How do I simplify and factor polynomial expressions?

Content:

1. Simplify/factor expressions involving polynomials.
2. Use polynomial identities.
3. Perform arithmetic operations on polynomials.

Vocabulary:

- Binomial
- Degree of a Monomial
- Degree of a Polynomial
- Factor
- Greatest Common Factor
- Leading Coefficient
- Monomial
- Perfect-Square Trinomial
- Polynomial
- Prime Factorization
- Set
- Standard Form
- Trinomial

Resources: Holt McDougal Algebra 1 Common Core Edition Textbook
Graphing Calculator

STANDARDS: STANDARDS

STATE: Pennsylvania SAS Keystone Anchors (2010-2014)

[A1.1.1.2.1](#) Find the Greatest Common Factor (GCF) and/or the Least
(Advanced) Common Multiple (LCM) for sets of monomials.

[A1.1.1.5.1](#) Add, subtract, and/or multiply polynomial expressions
(Advanced) (express answers in simplest form). Note: Nothing larger than a binomial multiplied by a trinomial.

[A1.1.1.5.2](#) Factor algebraic expressions, including difference of squares
(Advanced) and trinomials. Note: Trinomials are limited to the form $ax^2 + bx + c$ where a is equal to 1 after factoring out all monomial factors.

[A1.1.3.2.2](#) Interpret solutions to problems in the context of the
(Advanced) problem situation. Note: Limit systems to two linear inequalities.

Topic: Lesson 36 & 37

Minutes for Topic: 80

Core Lesson Description: Polynomials

Core Lesson Student Learning Objectives: Students will be able to:

1. **(E)** Classify polynomials and write polynomials in standard form.
2. **(E)** Evaluate polynomial expressions.

Topic: Lesson 38 & 39

Minutes for Topic: 80

Core Lesson Description: Adding and Subtracting Polynomials

Core Lesson Student Learning Objectives: Students will be able to:
1. **(E)** Add and subtract polynomials.

Topic: Lesson 40 & 41

Minutes for Topic: 80

Core Lesson Description: **(I)** Review and Assessment

Topic: Lesson 42 & 43

Minutes for Topic: 80

Core Lesson Description: Multiplying Polynomials

Core Lesson Student Learning Objectives: Students will be able to:
1. **(E)** Multiply polynomials.

Topic: Lesson 44

Minutes for Topic: 40

Core Lesson Description: Multiply Binomials Using FOIL

Core Lesson Student Learning Objectives: Students will be able to:
1. **(C)** Multiply binomials using FOIL.

Topic: Lesson 45 & 46

Minutes for Topic: 80

Core Lesson Description: Special Products of Binomials

Core Lesson Student Learning Objectives: Students will be able to:
1. **(E)** Find special products of binomials.

Topic: Lesson 47 - 50

Minutes for Topic: 160

Core Lesson Description: **(I)** Review and Assessment

Topic: Lesson 51

Minutes for Topic: 40

Core Lesson Description: Finding Greatest Common Factors of Monomials

Core Lesson Student Learning Objectives: Students will be able to:
1. **(E)** Write the prime factorization of numbers.
2. **(E)** Find the greatest common factor of monomials

Topic: Lesson 52

Minutes for Topic: 40

Core Lesson Description: Factoring Using the Distributive Property

Core Lesson Student Learning Objectives: Students will be able to:
1. **(E)** Factor polynomials by using the greatest common factor.

Topic: Lesson 53 & 54

Minutes for Topic: 80

Core Lesson Description: Factoring by Grouping

Core Lesson Student Learning Objectives: Students will be able to:
1. **(E)** Factor by grouping.

Topic: Lesson 55 & 56

Minutes for Topic: 80

Core Lesson Description: **(I)** Review and Assessment

Topic: Lesson 57 & 58

Minutes for Topic: 80

Core Lesson Description: Factoring Quadratic Trinomials with Leading Coefficient Not Equal to 1

Core Lesson Student Learning Objectives: Students will be able to:
1. **(E)** Factor quadratic trinomials with leading coefficient not equal to 1.

Topic: Lesson 59 & 60

Minutes for Topic: 80

Core Lesson Description: Factoring Quadratic Trinomials with Leading Coefficient Equal to 1

Core Lesson Student Learning Objectives: Students will be able to:
1. **(E)** Factor quadratic trinomials with leading coefficient equal to 1.

Topic: Lesson 61 & 62

Minutes for Topic: 80

Core Lesson Description: Factoring Special Products

Core Lesson Student Learning Objectives: Students will be able to:
1. **(E)** Find special products of binomials.

Topic: Lesson 63 & 64

Minutes for Topic: 80

Core Lesson Description: Simplify Rational Expressions

Core Lesson Student Learning Objectives: Students will be able to:
1. **(E)** Simplify rational expressions.

Topic: Lesson 65 - 68

Minutes for Topic: 180

Core Lesson Description: **(I)** Review and Assessment

Unit: Patterns, Relations, and Functions

Month: January, February, March

Skills:

1. Find relationships between variables and determine whether a relation is a function.
2. Write relationships in function notation.
3. Use trend lines on scatter plots to make predictions.
4. Write and graph linear functions.
5. Identify and interpret the slope of a line.
6. Graph and analyze families of functions.

Essential Questions:

1. How do I translate among different representations of linear functions?
2. How do I identify and interpret the components of linear graphs?
3. How do I find and interpret slopes and intercepts of linear equations that model real-world problems?
4. How do I solve real-world problems involving linear equations?
5. How do I solve real-world problems involving systems of linear equations and inequalities?

Content:

1. Define, evaluate, and compare functions.
2. Identify and interpret the components of linear graphs.
3. Use the concept and notations of function to interpret and apply them in terms of their context.

4. Construct and compare linear and exponential models and solve problems.
5. Create a function and/or sequence that model relationships between two quantities.
6. Create and/or analyze functions using multiple representations (graph, table, and equation).
7. Write and/or identify linear equations in various forms (slope-intercept, point-slope, standard, etc.).
8. Describe, compute, and/or use linear rate of change (slope).

Vocabulary: Arithmetic Sequence
 Common Difference
 Constant of Variation
 Correlation
 Dependent Variable
 Direct Variation
 Domain
 Function
 Function Notation
 Independent Variable
 No Correlation
 Parallel Lines
 Perpendicular Lines
 Range
 Relation
 Scatter Plot
 Sequence
 Slope
 X-Intercept
 Y-Intercept

Resources: Holt McDougal Algebra 1 Common Core Edition Textbook
 Graphing Calculator

STANDARDS: STANDARDS

STATE: Pennsylvania SAS Keystone Anchors (2010-2014)

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| A1.1.3.1.3
(Advanced) | Interpret solutions to problems in the context of the problem situation. Note: Linear inequalities only. |
| A1.2.1.1 (Advanced) | Analyze and/or use patterns or relations. |
| A1.2.1.1.1
(Advanced) | Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically. |
| A1.2.1.1.2
(Advanced) | Determine whether a relation is a function, given a set of points or a graph. |
| A1.2.1.1.3
(Advanced) | Identify the domain or range of a relation (may be presented as ordered pairs, a graph, or a table). |
| A1.2.1.2 (Advanced) | Interpret and/or use linear functions and their equations, graphs, or tables. |
| A1.2.1.2.1
(Advanced) | Create, interpret, and/or use the equation, graph, or table of a linear function. |
| A1.2.1.2.2
(Advanced) | Translate from one representation of a linear function to another (i.e., graph, table, and equation). |
| A1.2.2.1.2
(Advanced) | Apply the concept of linear rate of change (slope) to solve problems. |
| A1.2.2.1.4
(Advanced) | Determine the slope and/or y-intercept represented by a linear equation or graph. |
| A1.2.3.2.3
(Advanced) | Make predictions using the equations or graphs of best-fit lines of scatter plots. |

Topic: Lesson 69

Minutes for Topic: 40

Core Lesson Description: Graphing Relationships**Core Lesson Student Learning Objectives:** Students will be able to:

1. **(E)** Match simple graphs with situations.
2. **(E)** Graph a relationship.

Topic: Lesson 70

Minutes for Topic: 40

Core Lesson Description: Relations and Functions**Core Lesson Student Learning Objectives:** Students will be able to:

1. **(E)** Identify functions.
2. **(E)** Find the domain and range of relations and functions.

Topic: Lesson 71 & 72

Minutes for Topic: 80

Core Lesson Description: Writing Functions**Core Lesson Student Learning Objectives:** Students will be able to:

1. **(E)** Identify independent and dependent variables.
2. **(E)** Write an equation in function notation and evaluate a function for given input values.

Topic: Lesson 73 & 74

Minutes for Topic: 80

Core Lesson Description: **(I)** Review and Assessment**Topic: Lesson 75 & 76**

Minutes for Topic: 80

Core Lesson Description: Graphing Functions**Core Lesson Student Learning Objectives:** Students will be able to:

1. **(E)** Graph functions given a limited domain.
2. **(E)** Graph functions given a domain of all real numbers.

Topic: Lesson 77 & 78

Minutes for Topic: 80

Core Lesson Description: Scatter Plots and Trend Lines**Core Lesson Student Learning Objectives:** Students will be able to:

1. **(E)** Create and interpret scatter plots.
2. **(E)** Use trend lines to make predictions.

Topic: Lesson 79-82

Minutes for Topic: 160

Core Lesson Description: **(I)** Review and Assessment**Topic: Lesson 83**

Minutes for Topic: 40

Core Lesson Description: Identifying Linear Functions**Core Lesson Student Learning Objectives:** Students will be able to:

1. **(E)** Identify linear functions and linear equations.
2. **(C)** Graph linear functions that represent real-world situations and give their domain and range.

Topic: Lesson 84 & 85

Minutes for Topic: 80

Core Lesson Description: Using Intercepts**Core Lesson Student Learning Objectives:** Students will be able to:

1. **(E)** Find x- and y- intercepts and interpret their meanings in real-world situations.
2. **(E)** Use x- and y- intercepts to graph lines.

Topic: Lesson 86

Minutes for Topic: 40

Core Lesson Description: Rate of Change and Slope**Core Lesson Student Learning Objectives:** Students will be able to:

1. **(E)** Find rates of change and slopes.
2. **(E)** Relate a constant rate of change to the slope of a line.

Topic: Lesson 87 & 88

Minutes for Topic: 80

Core Lesson Description: The Slope Formula

Core Lesson Student Learning Objectives: Students will be able to:
1. **(E)** Find slope by using the slope formula.

Topic: Lesson 89

Minutes for Topic: 40

Core Lesson Description: Direct Variation

Core Lesson Student Learning Objectives: Students will be able to:
1. **(C)** Identify, write, and graph direct variation.

Topic: Lesson 90 & 91

Minutes for Topic: 80

Core Lesson Description: **(I)** Review and Assessment

Topic: Lesson 92 & 93

Minutes for Topic: 80

Core Lesson Description: Slope-Intercept Form

Core Lesson Student Learning Objectives: Students will be able to:
1. **(E)** Write a linear equation in slope-intercept form.
2. **(E)** Graph a line using slope-intercept.

Topic: Lesson 94 & 95

Minutes for Topic: 80

Core Lesson Description: Point-Slope Form

Core Lesson Student Learning Objectives: Students will be able to:
1. **(E)** Graph a line and write a linear equation using point-slope form.
2. **(E)** Write a linear equation given two points.

Topic: Lesson 96 & 97

Minutes for Topic: 80

Core Lesson Description: Lines of Best Fit

Core Lesson Student Learning Objectives: Students will be able to:
1. **(E)** Determine a line of best fit for a set of linear data.
2. **(C)** Determine and interpret the correlation coefficient.

Topic: Lesson 98 & 99

Minutes for Topic: 80

Core Lesson Description: Slopes of Parallel and Perpendicular Lines

Core Lesson Student Learning Objectives: Students will be able to:

1. **(I)** Identify and graph parallel and perpendicular lines.
2. **(I)** Write equations to describe lines parallel or perpendicular to a given line.

Topic: Lessons 100-103

Minutes for Topic: 180

Core Lesson Description: **(I)** Review and Assessment

Unit: Categorical and Quantitative Data

Month: April

- Skills:**
1. Organize data in tables, graphs, and plots.
 2. Find the central tendency of a data set by calculating mean, median, and mode.

- Essential Questions:**
1. How do I organize and display data to answer questions?
 2. How do I use descriptive statistics to summarize data sets?

- Content:**
1. Create and interpret stem-and-leaf plots.
 2. Create and interpret frequency tables and histograms.
 3. Create and interpret box-and-whisker plots.

Vocabulary: Frequency
Median
Outlier
Quartile

Resources: Holt McDougal Algebra 1 Common Core Edition Textbook
Graphing Calculator

STANDARDS: STANDARDS

STATE: Pennsylvania SAS Keystone Anchors (2010-2014)

- [A1.2.3.1.1 \(Advanced\)](#) Calculate and/or interpret the range, quartiles, and interquartile range of data.
- [A1.2.3.2.1](#) Estimate or calculate to make predictions based on a circle,

[\(Advanced\)](#)

line, bar graph, measure of central tendency, or other representation.

[A1.2.3.2.2](#)
[\(Advanced\)](#)

Analyze data, make predictions, and/or answer questions based on displayed data (box-and-whisker plots, stem-and-leaf plots, scatter plots, measures of central tendency, or other representations).

Topic: Lesson 122

Minutes for Topic: 40

Core Lesson Description: Organizing and Displaying Data

Core Lesson Student Learning Objectives: Students will be able to:
1. **(E)** Organize data in tables and graphs.

Topic: Lesson 123

Minutes for Topic: 40

Core Lesson Description: Frequency and Histograms

Core Lesson Student Learning Objectives: Students will be able to:
1. **(E)** Create stem-and-leaf plots.
2. **(E)** Create frequency tables and histograms.

Topic: Lesson 124 & 125

Minutes for Topic: 80

Core Lesson Description: Data Distributions

Core Lesson Student Learning Objectives: Students will be able to:
1. **(E)** Describe the central tendency of a data set.
2. **(E)** Create and interpret box-and-whisker plots.

Topic: Lesson 126 & 127

Minutes for Topic: 80

Core Lesson Description: **(I)** Review and Assessment

Unit: Probability

Month: April

Skills: 1. Write experimental and theoretical probability as ratios, percents, and decimals.

Essential Questions:

1. How do I calculate theoretical and experimental probability?
2. How do I use probability to make predictions?

Content:

1. Calculate theoretical and experimental probability.
2. Identify independent and dependent events.

Vocabulary:

- Dependent Events
- Experimental Probability
- Independent Events
- Probability
- Theoretical Probability

Resources:

- Holt McDougal Algebra 1 Common Core Edition Textbook
- Graphing Calculator

STANDARDS: STANDARDS

STATE: Pennsylvania SAS Keystone Anchors (2010-2014)

[A1.2.3.3.1](#)
(Advanced)

Find probabilities for compound events (e.g., find probability of red and blue, find probability of red or blue) and represent as a fraction, decimal, or percent.

Topic: Lesson 128 & 129

Minutes for Topic: 80

Core Lesson Description: Theoretical Probability

Core Lesson Student Learning Objectives: Students will be able to:

1. **(E)** Determine the theoretical probability of an event.
2. **(C)** Convert between probabilities and odds.

Topic: Lesson 130

Minutes for Topic: 40

Core Lesson Description: Independent and Dependent Events

Core Lesson Student Learning Objectives: Students will be able to:

1. **(E)** Find the probability of independent events.
2. **(E)** Find the probability of dependent events.

Topic: Lesson 131 & 132

Minutes for Topic: 80

**Core Lesson
Description:**

(I) Review and Assessment

Unit: Keystone Preparation

Month: May

Essential Questions: How do I prepare for the Algebra Keystone Exams?

Content: All Keystone Eligible Content

Vocabulary: Absolute Value
Arithmetic Sequence
Base
Binomial
Common Difference
Compound Inequality
Consistent System
Constant of Variation
Correlation
Degree of a Monomial
Degree of a Polynomial
Dependent Events
Dependent System
Dependent Variable
Direct Variation
Domain
Equation
Experimental Probability
Exponent
Factor
Formula
Frequency
Function
Function Notation
Greatest Common Factor
Identity
Inconsistent System
Independent Events
Independent System
Independent Variable
Index
Indirect Measurement
Inequality
Integer
Intersection
Leading Coefficient
Linear Inequality
Literal Equation
Median
Monomial
No Correlation
Outlier
Parallel Lines
Perfect-Square Trinomial
Perpendicular Lines
Polynomial
Prime Factorization
Probability
Proportion
Quartile
Range
Ratio
Relation
Root

Scatter Plot
Sequence
Set
Slope
Solution of a Linear Inequality
Solution of an Inequality
Standard Form
System of Linear Equations
Theoretical Probability
Trinomial
Unit Rate
X-Intercept
Y-Intercept

Resources: PDE SAS - Keystone Item Samples
Graphing Calculator

STANDARDS: STANDARDS

STATE: Pennsylvania SAS Keystone Anchors (2010-2014)

[A1.1.1 \(Advanced\)](#) Operations with Real Numbers and Expressions
[A1.1.2 \(Advanced\)](#) Linear Equations
[A1.1.3 \(Advanced\)](#) Linear Inequalities
[A1.2.1 \(Advanced\)](#) Functions
[A1.2.3 \(Advanced\)](#) Data Analysis

Topic: Lesson 133-137

Minutes for Topic: 200

Core Lesson Description: Standardized Test Taking Strategies for Multiple Choice Questions

Core Lesson Student Learning Objectives: Students will be able to:

1. **(I)** Apply content knowledge and testing strategies to multiple choice questions.

Topic: Lesson 138-142

Minutes for Topic: 200

Core Lesson Description: Test Taking Strategies for Constructed Response Items

Core Lesson Student Learning Objectives: Students will be able to:

1. **(I)** Apply content knowledge and test taking strategies to constructed response items.